

X-533-63-1

ATSS-6

N64 13392+

code-1

SPACE OPERATIONS CONTROL CENTER

TELLITE SITUATION REPORT

NASA TM X-53375

NASA X-533

VOL. 3, NO. 24

OTS PRICE

XEROX

MICROFILM \$

2.60 per 2
0.92 mfr

DECEMBER 15, 1963 29p

open



NASA

GODDARD SPACE FLIGHT CENTER

GREENBELT, MD.

SPACE OPERATIONS CONTROL CENTER
GODDARD SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

VOLUME 3 NO. 24

DECEMBER 15, 1963

SATELLITE SITUATION REPORT

THE FOLLOWING REPORT REFLECTS DATA COMPUTED AND COMPILED BY THE
GODDARD SPACE FLIGHT CENTER, NORAD, AND SMITHSONIAN ASTROPHYSICAL
OBSERVATORY AS OF 1200Z ON DECEMBER 15, 1963

OBJECT	OBJECTS IN ORBIT				TRANSMITTING FREQ. (MC/S)
	CODE NAME	SOURCE	LAUNCH	NODAL PERIOD	
1958 LAUNCHES					
ALPHA 1	EXPLORER 1	US	1 FEB	104.7	33.19 34.26 34.33
BETA 1	ROCKET BODY	US	17 MAR	138.2	
BETA 2	VANGUARD 1	US	17 MAR	133.9	
1959 LAUNCHES					
ALPHA 1	VANGUARD 2	US	17 FEB	125.3	32.88 32.92 33.34
ALPHA 2	ROCKET BODY	US	17 FEB	129.5	
ETA 1	VANGUARD 3	US	18 SEP	129.7	
MU 1*	LUNIK 1	USSR	2 JAN	450 D	0.01
NU 1*	PIONEER 4	US	3 MAR	398 D	1.30
IOTA 1	EXPLORER 7	US	13 OCT	101.1	50.31
IOTA 2	ROCKET BODY	US	13 OCT	100.9	50.31
1960 LAUNCHES					
ALPHA 1*	PIONEER 5	US	11 MAR	312 D	3.35
BETA 1	ROCKET BODY	US	1 APR	99.0	48.39
BETA 2	TIROS 1	US	1 APR	99.1	48.38
BETA 3	NONE	US	1 APR	97.8	48.48
BETA 4	NONE	US	1 APR	99.8	48.16
GAMMA 2	TRANSIT 1B	US	13 APR	94.0	51.30
GAMMA 4	NONE	US	13 APR	96.7	51.25
EPSILON 3	NONE	USSR	15 MAY	91.7	64.96
ZETA 1	MIDAS 2	US	24 MAY	94.2	33.06
ETA 1	TRANSIT 2A	US	22 JUN	101.6	66.69
ETA 2	GREB	US	22 JUN	101.6	66.69
ETA 3	ROCKET BODY	US	22 JUN	101.4	66.67

OBJECTS IN ORBIT								
OBJECT	CODE NAME	SOURCE	LAUNCH	NODAL PERIOD	INCLI - NATION	APOGEE Km.	PERIGEE Km.	TRANSMITTING FREQ. (MC/S)
1960 LAUNCHES (CONT'D)								
IOTA 1	ECHO 1	US	12 AUG	114.7	47.22	1722	1172	
IOTA 2	ROCKET BODY	US	12 AUG	118.0	47.25	1679	1509	
IOTA 3	METAL OBJECT	US	12 AUG	118.2	47.23	1700	1504	
IOTA 4	METAL OBJECT	US	12 AUG	INSUFFICIENT OBSERVATIONS				
IOTA 5	METAL OBJECT	US	12 AUG	118.3	47.29	1691	1529	
NU 1	COURIER 1B	US	4 OCT	106.9	28.35	1227	952	
NU 2	ROCKET BODY	US	4 OCT	106.4	28.25	1202	933	
XI 1	EXPLORER 8	US	3 NOV	112.3	49.96	2242	429	
XI 2	ROCKET BODY	US	3 NOV	111.9	49.98	2207	427	
XI 3	NONE	US	3 NOV	109.4	49.37	2006	401	
XI 4	NONE	US	3 NOV	110.7	50.51	2109	421	
PI 1	TIROS 2	US	23 NOV	98.2	48.53	748	601	
PI 2	ROCKET BODY	US	23 NOV	98.0	48.51	728	609	
PI 3	NONE	US	23 NOV	98.1	48.53	727	615	
PI 4	NONE	US	23 NOV	98.2	48.49	725	630	
1961 LAUNCHES								
ALPHA 1	SAMOS 2	US	31 JAN	94.8	97.43	538	473	
ALPHA 2	METAL OBJECT	US	31 JAN	94.7	97.43	534	471	
GAMMA 1*	VENUS PROBE	USSR	12 FEB	300 D	0.58	1.019AU	0.7183AU	
DELTA 1	EXPLORER 9	US	16 FEB	111.6	38.96	2228	383	
DELTA 2	ROCKET BODY	US	16 FEB	118.4	38.85	2581	646	
DELTA 3	NONE	US	16 FEB	INSUFFICIENT OBSERVATIONS				
KAPPA 1	EXPLORER 10	US	25 MAR	POSITION UNCERTAIN				
NU 1	EXPLORER 11	US	27 APR	107.8	28.81	1806	462	
OMICRON 1	TRANSIT 4A	US	29 JUN	103.8	66.80	998	880	105;400
OMICRON 2	INJUN-SR-3	US	29 JUN	103.8	66.80	998	881	
OMICRON 3-206**	METAL OBJECTS	US	29 JUN					
RHO 1	TIROS 3	US	12 JUL	100.3	47.90	790	765	

OBJECTS IN ORBIT

TRANSMITTING
FREQ. (MC/S)

PERIGEE
Km.

APOGEE
Km.

INCL-
NATION

NODAL
PERIOD

LAUNCH

SOURCE

CODE NAME

OBJECT

1961 LAUNCHES (CONT'D)

RHO 2	ROCKET BODY	US	12 JUL	100.3	47.92	799	751
RHO 3	METAL OBJECT	US	12 JUL	98.8	47.94	799	608
RHO 4	METAL OBJECT	US	12 JUL	101.9	47.84	942	766
SIGMA 1	MIDAS 3	US	12 JUL	161.5	91.19	3573	3316
SIGMA 3	METAL OBJECT	US	12 JUL	161.2	91.22	3560	3302
SIGMA 4	METAL OBJECT	US	12 JUL	161.9	91.19	3572	3350
UPSILON 1	EXPLORER 12	US	16 AUG	INSUFFICIENT OBSERVATIONS			
A DELTA 1	MIDAS 4	US	21 OCT	166.0	95.89	3764	3488
A DELTA 3	METAL OBJECT	US	21 OCT	165.6	95.78	3714	3505
A DELTA 4	METAL OBJECT	US	21 OCT	166.4	95.86	3784	3501
A ETA 1	TRANSIT 4B	US	15 NOV	105.6	32.44	1104	958
A ETA 2	TRAAC	US	15 NOV	105.6	32.43	1104	961
A ETA 3	ROCKET BODY	US	15 NOV	105.5	32.43	1092	957

1962 LAUNCHES

ALPHA 1*	RANGER 3	US	26 JAN	406.4D	.3988	1.163AU	0.9839AU
ALPHA 2	ROCKET BODY	US	26 JAN	INSUFFICIENT OBSERVATIONS			
BETA 1	TIROS 4	US	8 FEB	100.3	48.32	839	713
BETA 2	ROCKET BODY	US	8 FEB	101.3	48.14	943	703
BETA 3	METAL OBJECT	US	8 FEB	99.4	48.40	768	699
BETA 4	METAL OBJECT	US	8 FEB	100.2	48.27	837	710
ZETA 1	ORB. SOL. OBS. 1	US	7 MAR	95.9	32.84	592	547
ZETA 2	ROCKET BODY	US	7 MAR	95.9	32.78	587	552
KAPPA 1		US	9 APR	153.0	86.66	3412	2783
KAPPA 3		US	9 APR	152.7	86.59	3366	2798
KAPPA 4		US	9 APR	153.4	86.65	3425	2798
MU 2	ROCKET BODY	US	23 APR	INSUFFICIENT OBSERVATIONS			
OMICRON 1	ARIEL	US/UK	26 APR	100.6	53.88	1193	382
OMICRON 2	ROCKET BODY	US/UK	26 APR	100.5	53.86	1170	399

136.406

OBJECTS IN ORBIT

OBJECT	CODE NAME	SOURCE	LAUNCH	NODAL PERIOD	INCLI - NATION	APOGEE Km.	PERIGEE Km.	TRANSMITTING FREQ. (MC/S)
1962 LAUNCHES (CONT'D)								
A ALPHA 1	TIROS 5	US	19 JUN	100.4	58.11	959	603	
A ALPHA 2	ROCKET BODY	US	19 JUN	100.4	58.09	972	582	
A ALPHA 3	METAL OBJECT	US	19 JUN	101.7	58.21	1079	604	
A ALPHA 4	METAL OBJECT	US	19 JUN	99.1	57.99	866	566	
A EPSILON 1	TELSTAR 1	US	10 JUL	157.7	44.80	5647	940	
A EPSILON 2	ROCKET BODY	US	10 JUL	157.5	44.79	5633	940	
A OMICRON 1		US	23 AUG	99.6	98.68	852	620	
A OMICRON 2		US	23 AUG	98.3	98.69	752	598	
A OMICRON 3		US	23 AUG	100.9	98.66	962	631	
A OMICRON 4		US	23 AUG	99.6	98.68	846	625	
A RHO 1*	MARINER	US	27 AUG	COMPUTATIONS IN PROGRESS				
A RHO 2*	ROCKET BODY	US	27 AUG	COMPUTATIONS IN PROGRESS				
A UPSILON 1		US	1 SEP	92.65	82.81	500	285	
A PSI 1	TIROS 6	US	18 SEP	98.7	58.30	706	691	
A PSI 2	ROCKET BODY	US	18 SEP	98.6	58.31	709	682	
A PSI 3	METAL OBJECT	US	18 SEP	99.4	58.44	756	702	
A PSI 4	METAL OBJECT	US	18 SEP	98.0	58.21	697	633	
B ALPHA 1	ALOUETTE	CANADA	29 SEP	105.5	80.47	1029	1004	136.979; \$136.592 \$136.077
B ALPHA 2	ROCKET BODY	US	29 SEP	105.5	80.46	1023	1005	
B ALPHA 3	METAL OBJECT	US	29 SEP	105.4	80.48	1032	990	
B ALPHA 4	METAL OBJECT	US	29 SEP	105.5	80.41	1031	1002	
B GAMMA 1	EXPLORER 14	US	2 OCT	2184.6	41.16	96222	2567	136.441
B GAMMA 2	ROCKET BODY	US	2 OCT	INSUFFICIENT OBSERVATIONS				
B ETA 1*	RANGER 5	US	18 OCT	366 D	.39011	1.052AU	.9490AU	
B ETA 2*	ROCKET BODY	US	18 OCT	COMPUTATIONS IN PROGRESS				
B THETA 1		USSR	20 OCT	92.3	48.95	565	221	
B KAPPA 1		US	26 OCT	138.6	71.46	4788	199	
B LAMBDA 1	EXPLORER 15	US	27 OCT	314.2	17.98	17565	318	

OBJECTS IN ORBIT

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>NODAL PERIOD</u>	<u>INCLI - NATION</u>	<u>APOGEE Km.</u>	<u>PERIGEE Km.</u>	<u>TRANSMITTING FREQ. (MC/S)</u>
1962 LAUNCHES (CONT'D)								
B LAMBDA 2	ROCKET BODY	US	27 OCT	INSUFFICIENT OBSERVATIONS				
B MU 1	ANNA 1B	US	31 OCT	107.8	50.14	1172	1088	162; 324
B MU 2	ROCKET BODY	US	31 OCT	107.5	50.15	1150	1082	
B NU 3*		USSR	1 NOV	519 D	2.683	1.604AU	9237AU	
B TAU 1		US	13 DEC	112.2	70.35	2414	230	
B TAU 2		US	13 DEC	114.1	70.32	2579	236	
B TAU 4		US	13 DEC	110.0	70.35	2223	229	
B TAU 5		US	13 DEC	112.0	70.32	2406	229	
B TAU 6		US	13 DEC	113.5	70.32	2539	236	
B UPSILON 1	RELAY 1	US	13 DEC	185.0	47.50	7435	1324	136.140; \$136.620
B UPSILON 2	ROCKET BODY	US	13 DEC	184.8	47.90	7468	1274	
B CHI 1	EXPLORER 16	US	16 DEC	104.3	52.05	1194	736	
B PSI 1	TRANSIT 5A	US	19 DEC	99.1	90.63	728	701	
B PSI 2		US	19 DEC	97.8	90.73	729	574	
B PSI 3		US	19 DEC	99.1	90.63	732	697	
B PSI 4		US	19 DEC	100.3	90.48	838	699	
1963 LAUNCHES								
1963 3A		US	16 JAN	94.6	81.88	532	459	
1963 3C		US	16 JAN	91.6	81.87	352	347	
1963 4A	SYNCOM	US	14 FEB	1426.4	33.51	37016	38182	
1963 4B	ROCKET BODY	US	14 FEB	604.4	33.12	34374	253	
1963 5A		US	19 FEB	97.8	100.50	792	507	
1963 5B		US	19 FEB	97.8	100.50	794	504	
1963 5C		US	19 FEB	97.0	100.49	749	476	
1963 5D		US	19 FEB	98.4	100.47	829	533	
1963 8B		USSR	2 APR	COMPUTATIONS IN PROGRESS				
1963 9A	EXPLORER 17	US	3 APR	95.6	57.61	846	249	
1963 13A	TELSTAR 2	US	7 MAY	225.2	42.76	10815	962	136.050

OBJECTS IN ORBIT

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>NODAL PERIOD</u>	<u>INCLINATION</u>	<u>APOGEE Km.</u>	<u>PERIGEE Km.</u>	<u>TRANSMITTING FREQ. (MC/S)</u>
1963 LAUNCHES (CONT'D)								
1963 13B	ROCKET BODY	US	7 MAY	225.0	42.74	10799	961	
1963 14A		US	9 MAY	166.5	87.40	3649	3540	
1963 14B		US	9 MAY	156.5	87.35	3673	3618	
1963 14C		US	9 MAY	166.5	87.34	3682	3508	
1963 14D		US	9 MAY	166.5	87.36	3676	3611	
1963 14E		US	9 MAY	166.1	87.47	3669	3591	
1963 14F		US	9 MAY	156.9	87.34	3697	3623	
1963 14G		US	9 MAY	166.5	87.35	3658	3629	
1963 14H		US	9 MAY	166.5	87.42	3703	3588	
1963 17A		USSR	22 MAY	93.8	48.98	664	261	
1963 17C		USSR	22 MAY	95.1	49.20	715	339	
1963 17G		USSR	22 MAY	92.2	48.99	520	251	
1963 22A		US	16 JUN	99.8	90.01	765	723	150;400
1963 22B		US	16 JUN	99.8	90.02	765	723	
1963 22C		US	16 JUN	101.3	90.20	904	729	
1963 22D		US	16 JUN	98.2	89.83	764	578	
1963 24A	TIROS 7	US	19 JUN	97.4	58.22	652	619	136.233;136.922
1963 24B	ROCKET BODY	US	19 JUN	97.3	58.22	644	621	
1963 24C	METAL OBJECT	US	19 JUN	97.9	58.37	663	652	
1963 24D	METAL OBJECT	US	19 JUN	96.9	58.10	651	569	
1963 25B		US	27 JUN	132.5	82.12	4122	335	
1963 26A	RESEARCH SATELLITE FOR GEOPHYSICS	US	28 JUN	102.0	49.74	1297	421	
1963 27A		US	29 JUN	94.8	82.31	524	486	
1963 27B		US	29 JUN	94.2	82.31	486	468	
1963 30A		US	19 JUL	167.9	88.37	3765	3638	
1963 30B		US	19 JUL	167.9	88.41	3730	3673	136.891
1963 30C		US	19 JUL	167.5	88.41	3701	3674	
1963 30D		US	19 JUL	168.0	88.47	3883	3529	
1963 30E		US	19 JUL	168.3	88.42	3765	3673	

OBJECTS IN ORBIT

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>NODAL PERIOD</u>	<u>INCLINATION</u>	<u>APOGEE Km.</u>	<u>PERIGEE Km.</u>	<u>TRANSMITTING FREQ(MC/S)</u>
1963 LAUNCHES(CONT'D)								
1963 31A	SYNCOM 2	US	26 JUL	1436.0	33.16	35811	35761	\$136.980;\$136.468 \$1814.069;\$1815.794 \$1820.177
1963 31B	ROCKET BODY	US	26 JUL	624.2	33.15	35405	251	
1963 33A		USSR	6 AUG	91.1	49.03	409	261	
1963 38A		US	28 SEP	107.1	89.91	1119	1064	
1963 38B		US	28 SEP	107.4	89.91	1142	1067	
1963 38C		US	28 SEP	107.4	89.91	1139	1068	136.651
1963 38D		US	28 SEP	107.4	89.92	1149	1058	
1963 39A		US	17 OCT	INSUFFICIENT OBSERVATIONS				
1963 39B		US	17 OCT	INSUFFICIENT OBSERVATIONS				
1963 39C		US	17 OCT	INSUFFICIENT OBSERVATIONS				
1963 42A		US	29 OCT	90.2	89.90	291	269	
1963 42B	POLYOT 1	US	29 OCT	93.2	89.98	563	297	
1963 43A		USSR	1 NOV	102.4	58.86	1414	333	
1963 43B		USSR	1 NOV	102.2	58.63	1393	332	
1963 43C		USSR	1 NOV	100.6	58.95	1280	298	
1963 43D		USSR	1 NOV	101.9	59.76	1362	333	
1963 46A		US	27 NOV	5583	33.30	195572	194	136.110
1963 47A		US	27 NOV	107.6	30.38	1775	478	
1963 47B		US	27 NOV	107.1	30.06	1624	576	
1963 47C		US	27 NOV	107.3	30.06	1643	580	
1963 47D		US	27 NOV	107.9	29.93	1663	608	
1963 47E	EXPLORER 18 CENTAUR 2	US	27 NOV	108.2	30.51	1740	566	
1963 47F		US	27 NOV	108.5	30.49	1751	578	
1963 47G		US	27 NOV	107.7	30.02	1543	610	
1963 49A		US	5 DEC	106.9	89.98	1085	1071	
1963 49B		US	5 DEC	107.2	89.98	1113	1073	

<u>OBJECTS IN ORBIT</u>									
<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>NODAL PERIOD</u>	<u>INCLI-NATION</u>	<u>APOGEE Km.</u>	<u>PERIGEE Km.</u>	<u>TRANSMITTING FREQ. (MC/S)</u>	
1963 LAUNCHES (CONT'D)									
1963 49C		US	5 DEC	107.2	89.97	1111	1074		
1963 49D		US	5 DEC	107.1	89.99	1108	1073		
1963 50A	COSMOS 23	USSR	13 DEC	92.9	48.97	605	231		
1963 50B		USSR	13 DEC	92.9	49.12	606	230		
1963 50C		USSR	13 DEC	92.8	49.11	624	212		

* APHELION PERIHELION IN ASTRONOMICAL UNITS, INCLINATION TO ECLIPTIC.

** TWO HUNDRED AND FOUR METAL OBJECTS HAVE BEEN IDENTIFIED AS HAVING BEEN LAUNCHED WITH 1961 OMICRON 1 AND 1961 OMICRON 2. OBJECTS OF THIS SERIES THAT HAVE DECAYED CAN BE FOUND IN THE DECAYED OBJECTS LISTS.

\$ TRANSMITTING ON COMMAND ONLY.

& TRANSMITTING WHEN IN SUNLIGHT ONLY.

DECAYED OBJECTS

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>DECAY</u>
1957 LAUNCHES				
ALPHA 1	ROCKET BODY	USSR	4 OCT	1 DEC 57
ALPHA 2	SPUTNIK 1	USSR	4 OCT	EARLY JAN 58
BETA 1	SPUTNIK 2	USSR	3 NOV	14 APR 58
1958 LAUNCHES				
GAMMA 1	EXPLORER 3	US	26 MAR	28 JUN 58
DELTA 1	ROCKET BODY	USSR	15 MAY	3 DEC 58
DELTA 2	SPUTNIK 3	USSR	15 MAY	6 APR 60
EPSILON 1	EXPLORER 4	US	26 JUL	23 OCT 59
ZETA 1	SCORE	US	18 DEC	21 JAN 59
ETA 1	PIONEER 1	US	11 OCT	12 OCT 58
THETA 1	PIONEER 3	US	6 DEC	7 DEC 58
1959 LAUNCHES				
BETA 1	DISCOVERER 1	US	28 FEB	EARLY MAR 59
GAMMA 1	DISCOVERER 2	US	13 APR	26 APR 59
DELTA 1	EXPLORER 6	US	7 AUG	PRESUMED PRIOR JUL 61
DELTA 2	ROCKET BODY	US	7 AUG	PRESUMED PRIOR JUL 61
EPSILON 1	DISCOVERER 5	US	13 AUG	28 SEP 59
EPSILON 2	CAPSULE	US	13 AUG	11 FEB 61
ZETA 1	DISCOVERER 6	US	19 AUG	20 OCT 59
THETA 1	LUNIK 3	USSR	4 OCT	MAR 60
KAPPA 1	DISCOVERER 7	US	7 NOV	26 NOV 59
LAMBDA 1	DISCOVERER 8	US	20 NOV	8 MAR 60
XI 1	LUNIK 2	USSR	12 SEP	13 SEP 59*****

DECAYED OBJECTS (CONT'D)

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>DECAY</u>
1960 LAUNCHES				
GAMMA 1	ROCKET BODY	US	13 APR	18 AUG 60
GAMMA 3	METAL OBJECT	US	13 APR	JUL 60
DELTA 1	DISCOVERER 11	US	15 APR	26 APR 60
EPSILON 1	SPUTNIK 4	USSR	15 MAY	5 SEP 62
EPSILON 2	ROCKET BODY	USSR	15 MAY	17 JUL 60
EPSILON 4	NONE	USSR	15 MAY	PRIOR JUL 61
EPSILON 5	NONE	USSR	15 MAY	SEP-OCT 60
EPSILON 6	NONE	USSR	15 MAY	24 SEP 60
EPSILON 7	NONE	USSR	15 MAY	24 SEP 60
EPSILON 8	NONE	USSR	15 MAY	SEP-OCT 60
EPSILON 9	NONE	USSR	15 MAY	SEP-OCT 60
ZETA 2	METAL OBJECT	US	24 MAY	5 DEC 60
THETA 1	DISCOVERER 13	US	10 AUG	14 NOV 60
THETA 1	CAPSULE	US	10 AUG	11 AUG 60**
KAPPA 1	DISCOVERER 14	US	18 AUG	16 SEP 60
KAPPA 1	CAPSULE	US	18 AUG	19 AUG 60**
LAMBDA 1	SPUTNIK 5	USSR	19 AUG	20 AUG 60*
LAMBDA 2	ROCKET BODY	USSR	19 AUG	23 SEP 60
MU 1	DISCOVERER 15	US	13 SEP	18 OCT 60
MU 1	CAPSULE	US	13 SEP	15 SEP 60***
OMICRON 1	DISCOVERER 17	US	12 NOV	29 DEC 60
OMICRON 1	CAPSULE	US	12 NOV	14 NOV 60
RHO 1	SPUTNIK 6	USSR	1 DEC	2 DEC 60
RHO 2	ROCKET BODY	USSR	1 DEC	2 DEC 60
SIGMA 1	CAPSULE	US	7 DEC	10 DEC 60**
SIGMA 1	DISCOVERER 18	US	7 DEC	2 APR 61
TAU 1	DISCOVERER 19	US	20 DEC	23 JAN 61

DECAYED OBJECTS (CONT'D)

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>DECAY</u>
1961 LAUNCHES				
BETA 1	SPUTNIK 7	USSR	4 FEB	26 FEB 61
BETA 2	ROCKET BODY	USSR	4 FEB	12-13 FEB 61
BETA 3	NONE	USSR	4 FEB	17 MAR 61
GAMMA 2	ROCKET BODY	USSR	12 FEB	18 FEB 61
GAMMA 3	SPUTNIK 8	USSR	12 FEB	25 FEB 61
GAMMA 4	NONE	USSR	12 FEB	13-18 FEB 61
DELTA 4	NONE	US	16 FEB	PRIOR JUL 61
EPSILON 1	DISCOVERER 20	US	17 FEB	28 JUL 62
EPSILON 2	NONE	US	17 FEB	30 MAR-2 APR 61
EPSILON 3	NONE	US	17 FEB	20 APR 61
EPSILON 4	NONE	US	17 FEB	31 OCT 61
ZETA 1	DISCOVERER 21	US	18 FEB	20 APR 62
ETA 1	TRANSIT 3B & LOFTI	US	22 FEB	30 MAR 61
THETA 1	SPUTNIK 9	USSR	9 MAR	9 MAR 61*
THETA 2	NONE	USSR	9 MAR	10 MAR 61
THETA 3	NONE	USSR	9 MAR	10 MAR 61
THETA 4	NONE	USSR	9 MAR	10 MAR 61
IOTA 1	SPUTNIK 10	USSR	25 MAR	25 MAR 61
IOTA 2	ROCKET BODY	USSR	25 MAR	26 MAR 61
IOTA 3	NONE	USSR	25 MAR	26 MAR 61
LAMBDA 1	DISCOVERER 23	US	8 APR	16 APR 62
LAMBDA 2	CAPSULE	US	8 APR	23 MAY 62
LAMBDA 3	NONE	US	8 APR	10 SEP 61
MU 1	VOSTOK 1	USSR	12 APR	12 APR 61***
MU 2	ROCKET BODY	USSR	12 APR	16 APR 61
XI 1	CAPSULE	US	16 JUN	18 JUN 61**
XI 1	DISCOVERER 25	US	16 JUN	12 JUL 61
XI 2	NONE	US	16 JUN	19 JUN 61

DECAYED OBJECTS (CONT'D)

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>DECAY</u>
1961 LAUNCHES (CONT'D)				
OMICRON 25	METAL OBJECT	US	29 JUN	30 SEP 62
OMICRON 28	METAL OBJECT	US	29 JUN	16 JUN 62
OMICRON 46	METAL OBJECT	US	29 JUN	29 JAN 62
PI 1	DISCOVERER 26	US	7 JUL	5 DEC 61
PI 1	CAPSULE	US	8 JUL	9 JUL 61**
SIGMA 2	METAL OBJECT	US	12 JUL	24 JUL 61
TAU 1	VOSTOK 2	USSR	6 AUG	7 AUG 61****
TAU 2	ROCKET BODY	USSR	6 AUG	9 AUG 61
PHI 1	RANGER 1	US	23 AUG	30 AUG 61
PHI 2	ROCKET BODY	US	23 AUG	3 SEP 61
CHI 1	EXPLORER 13	US	25 AUG	28 AUG 61
PSI 1	DISCOVERER 29	US	30 AUG	10 SEP 61
PSI 1	CAPSULE	US	30 AUG	4 SEP 61
OMEGA 1	DISCOVERER 30	US	12 SEP	11 DEC 61
OMEGA 1	CAPSULE	US	12 SEP	15 SEP 61**
OMEGA 2	METAL OBJECT	US	12 SEP	18 SEP 61
OMEGA 3	METAL OBJECT	US	12 SEP	28 SEP 61
A ALPHA 1	MA-4	US	13 SEP	13 SEP 61**
A ALPHA 2	ROCKET BODY	US	13 SEP	13 SEP 61
A BETA 1	DISCOVERER 31	US	17 SEP	26 OCT 61
A GAMMA 1	DOSCOVERER 32	US	13 OCT	13 NOV 61
A GAMMA 1	CAPSULE	US	13 OCT	14 OCT 61**
A GAMMA 2	METAL OBJECT	US	13 OCT	25 OCT 61**
A GAMMA 3	METAL OBJECT	US	13 OCT	16 OCT 61
A DELTA 2		US	21 OCT	5 DEC 61
A EPSILON 1	DISCOVERER 34	US	5 NOV	7 DEC 62
A EPSILON 2	METAL OBJECT	US	5 NOV	30 NOV 61
A EPSILON 3	METAL OBJECT	US	5 NOV	9 DEC 61

DECAYED OBJECTS (CONT'D)

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>DECAY</u>
1961 LAUNCHES (CONT'D)				
A EPSILON 4	METAL OBJECT	US	5 NOV	10 DEC 61
A EPSILON 5	METAL OBJECT	US	5 NOV	12 DEC 61
A ZETA 1	DISCOVERER 35	US	15 NOV	3 DEC 61
A ZETA 1	CAPSULE	US	15 NOV	16 NOV 61**
A ZETA 2	METAL OBJECT	US	15 NOV	23 NOV 61
A THETA 1	RANGER 2	US	18 NOV	20 NOV 61
A IOTA 1	MA-5	US	29 NOV	29 NOV 61**
A IOTA 2	ROCKET BODY	US	29 NOV	30 NOV 61
A KAPPA 1	DISCOVERER 36	US	12 DEC	8 MAR 62
A KAPPA 1	CAPSULE	US	12 DEC	16 DEC 61**
A KAPPA 2	OSCAR 1	US	12 DEC	31 JAN 62
A KAPPA 3	METAL OBJECT	US	12 DEC	19 DEC 61
A LAMBDA 1		US	22 DEC	14 AUG 62
A LAMBDA 2		US	22 DEC	31 DEC 61
A LAMBDA 3		US	22 DEC	9 JAN 62
1962 LAUNCHES				
GAMMA 1	FRIENDSHIP 7	US	20 FEB	20 FEB 62*****
GAMMA 2	ROCKET BODY	US	20 FEB	21 FEB 62
DELTA 1		US	21 FEB	4 MAR 62
EPSILON 1	DISCOVERER 38	US	27 FEB	21 MAR 62
EPSILON 1	CAPSULE	US	27 FEB	3 MAR 62**
EPSILON 2	ROCKET BODY	US	27 FEB	3 MAR 62
EPSILON 3	METAL OBJECT	US	27 FEB	3 MAR 62
EPSILON 4	METAL OBJECT	US	27 FEB	7 MAR 62
ETA 1		US	7 MAR	7 JUN 63
ETA 2		US	7 MAR	31 MAR 62

DECAYED OBJECTS (CONT'D)

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>DECAY</u>
1962 LAUNCHES (CONT'D)				
ETA 3		US	7 MAR	3 NOV 62
THETA 1	COSMOS 1	USSR	16 MAR	25 MAY 62
THETA 2	ROCKET BODY	USSR	16 MAR	18 JUN 62
IOTA 1	COSMOS 2	USSR	6 APR	19-20 AUG 63
IOTA 2	ROCKET BODY	USSR	6 APR	6 OCT 62
KAPPA 2		US	9 APR	4 MAY 62
LAMBDA 1		US	18 APR	28 MAY 62
LAMBDA 2		US	18 APR	20 APR 62
LAMBDA 3		US	18 APR	21 APR 62
LAMBDA 4		US	18 APR	21 APR 62
MU 1	RANGER 4	US	23 APR	26 APR 62*****
NU 1	COSMOS 3	USSR	24 APR	17 OCT 62
NU 2	ROCKET BODY	USSR	24 APR	5 AUG 62
XI 1	COSMOS 4	USSR	26 APR	29 APR 62
XI 2	ROCKET BODY	USSR	26 APR	17 JUN 62
XI 3	METAL OBJECT	USSR	26 APR	3 MAY 62
PI 1		US	26 APR	28 APR 62
RHO 1		US	29 APR	26 MAY 62
RHO 2		US	29 APR	1 MAY 62
SIGMA 1		US	15 MAY	26 NOV 63
SIGMA 2		US	15 MAY	3 JUL 62
SIGMA 3		US	15 MAY	13 JUL 62
TAU 1	AURORA 7	US	24 MAY	24 MAY 62*****
TAU 2	ROCKET BODY	US	24 MAY	25 MAY 62
UPSILON 1	COSMOS 5	USSR	28 MAY	2 MAY 63
UPSILON 2	ROCKET BODY	USSR	28 MAY	15 DEC 62
PHI 1		US	30 MAY	11 JUN 62
PHI 2		US	30 MAY	2 JUN 62

DECAYED OBJECTS (CONT'D)

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>DECAY</u>
1962 LAUNCHES (CONT'D)				
CHI 1		US	2 JUN	28 JUN 62
CHI 2	OSCAR 2	US	2 JUN	21 JUN 62
CHI 3		US	2 JUN	6 JUN 62
PSI 1		US	17 JUN	18 JUN 62
OMEGA 1		US	18 JUN	29-30 OCT 63
OMEGA 2		US	18 JUN	12 JUL 62
OMEGA 3		US	18 JUN	14 JUL 62
A BETA 1		US	23 JUN	7 JUL 62
A GAMMA 1		US	28 JUN	14 SEP 62
A DELTA 1	COSMOS 6	USSR	30 JUN	8 AUG 62
A DELTA 2	ROCKET BODY	USSR	30 JUN	8 SEP 62
A ZETA 1		US	18 JUL	25 JUL 62
A ZETA 2		US	18 JUL	27 JUL 62
A ETA 1		US	21 JUL	14 AUG 62
A THETA 1		US	28 JUL	24 AUG 62
A IOTA 1	COSMOS 7	USSR	28 JUL	1 AUG 62
A IOTA 2	ROCKET BODY	USSR	28 JUL	21 AUG 62
A IOTA 3	METAL OBJECT	USSR	28 JUL	31 JUL 62
A IOTA 4	METAL OBJECT	USSR	28 JUL	30 JUL 62
A KAPPA 1		US	2 AUG	26 AUG 62
A KAPPA 2		US	2 AUG	8 AUG 62
A LAMBDA 1		US	5 AUG	6 AUG 62
A MU 1	VOSTOK 3	USSR	11 AUG	15 AUG 62****
A MU 2	ROCKET BODY	USSR	11 AUG	14 AUG 62
A NU 1	VOSTOK 4	USSR	12 AUG	15 AUG 62****
A NU 2	ROCKET BODY	USSR	12 AUG	14 AUG 62
A XI 1	COSMOS 8	USSR	18 AUG	17 AUG 63

DECAYED OBJECTS (CONT'D)

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>DECAY</u>
1962 LAUNCHES (CONT'D)				
A XI 2	ROCKET BODY	USSR	18 AUG	19 DEC 62
A PI 1		USSR	25 AUG	28 AUG 62
A PI 2		USSR	25 AUG	2 SEP 62
A PI 3		USSR	25 AUG	31 AUG 62
A PI 4		USSR	25 AUG	5 SEP 62
A PI 5		USSR	25 AUG	30 AUG 62
A PI 6		USSR	25 AUG	6 SEP 62
A PI 7		USSR	25 AUG	8 SEP 62
A PI 8		USSR	25 AUG	5 SEP 62
A SIGMA 1		US	29 AUG	10 SEP 62
A TAU 1		USSR	1 SEP	6 SEP 62
A TAU 2		USSR	1 SEP	3 SEP 62
A TAU 3		USSR	1 SEP	3 SEP -1 OCT 62
A TAU 4		USSR	1 SEP	21 SEP 62
A PHI 1		USSR	12 SEP	14 SEP 62
A PHI 2		USSR	12 SEP	12 SEP 62
A PHI 3		USSR	12 SEP	17 SEP 62
A PHI 4		USSR	12 SEP	13 SEP 62
A PHI 5		USSR	12 SEP	13 SEP 62
A PHI 6		USSR	12 SEP	16 SEP 62
A PHI 7		USSR	12 SEP	15 SEP 62
A CHI 1		US	17 SEP	16 NOV 62
A OMEGA 1		USSR	27 SEP	1 OCT 62
A OMEGA 2		USSR	27 SEP	22 DEC 62
A OMEGA 3		USSR	27 SEP	6 OCT 62
A OMEGA 4		USSR	27 SEP	8 OCT 62
A OMEGA 5		USSR	27 SEP	4 OCT 62
A OMEGA 6		USSR	27 SEP	8 OCT 62

DECAYED OBJECTS (CONT'D)

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>DECAY</u>
1962 LAUNCHES (CONT'D)				
A OMEGA 7		USSR	27 SEP	3 OCT 62
A OMEGA 8		USSR	27 SEP	6 OCT 62
B BETA 1		US	29 SEP	14 OCT 62
B DELTA 1		US	3 OCT	3 OCT 62*****
B DELTA 2		US	3 OCT	4 OCT 62
B EPSILON 1		US	9 OCT	16 NOV 62
B ZETA 1		USSR	17 OCT	21 OCT 62
B ZETA 2		USSR	17 OCT	5 NOV 62
B THETA 2		USSR	20 OCT	5 JUN 63
B IOTA 1		USSR	24 OCT	29 OCT 62
B IOTA 2		USSR	24 OCT	22 DEC 62
B IOTA 3		USSR	24 OCT	26 FEB 63
B IOTA 4		USSR	24 OCT	29 NOV 62
B IOTA 5		USSR	24 OCT	24 DEC 62
B IOTA 6		USSR	24 OCT	8 DEC 62
B IOTA 7		USSR	24 OCT	10 DEC 62
B IOTA 8		USSR	24 OCT	2 JAN 63
B IOTA 9		USSR	24 OCT	4 DEC 62
B IOTA 10		USSR	24 OCT	10 DEC 62
B IOTA 11		USSR	24 OCT	30 NOV 62
B IOTA 12		USSR	24 OCT	1 DEC 62
B IOTA 13		USSR	24 OCT	25 DEC 62
B IOTA 14		USSR	24 OCT	15 DEC 62
B IOTA 15		USSR	24 OCT	21 DEC 62
B IOTA 16		USSR	24 OCT	17 DEC 62
B IOTA 17		USSR	24 OCT	26 DEC 62
B IOTA 18		USSR	24 OCT	23 DEC 62
B IOTA 19		USSR	24 OCT	26 DEC 62
	SIGMA 7			
	ROCKET BODY			

DECAYED OBJECTS (CONT'D)

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>DECAY</u>
1962 LAUNCHES (CONT'D)				
B IOTA 20		USSR	24 OCT	10 DEC 62
B IOTA 21		USSR	24 OCT	9 DEC 62
B IOTA 22		USSR	24 OCT	28 DEC 62
B IOTA 23		USSR	24 OCT	26 DEC 62
B IOTA 24		USSR	24 OCT	31 DEC 62
B NU 1		USSR	1 NOV	2-3 NOV 62
B NU 2		USSR	1 NOV	3 NOV 62
B XI 1		USSR	4 NOV	5 NOV 62
B XI 2		USSR	4 NOV	8 NOV 62
B XI 3		USSR	4 NOV	19 JAN 63
B XI 4		USSR	4 NOV	25 DEC 62
B XI 5		USSR	4 NOV	27 DEC 62
B OMICRON 1		US	5 NOV	3 NOV 62
B PI 1		US	11 NOV	12 NOV 62
B RHO 1		US	24 NOV	13 DEC 62
B SIGMA 1		US	4 DEC	8 DEC 62
B TAU 3		US	13 DEC	1 JUL 63
B PHI 1		US	14 DEC	8 JAN 63
B OMEGA 1		USSR	22 DEC	30 DEC 62
B OMEGA 2		USSR	22 DEC	22 JAN 63
1963 LAUNCHES				
1963 1A		USSR	4 JAN	5 JAN 63
1963 1B		USSR	4 JAN	11 JAN 63
1963 1C		USSR	4 JAN	11 JAN 63

[illegible]

DECAYED OBJECTS (CONT'D)

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>DECAY</u>
1963 LAUNCHES (CONT'D)				
1963 20B		USSR	14 JUN	16 JUN 63
1963 21A		US	15 JUN	7 AUG 63
1963 21B	LOFTI 2A	US	15 JUN	18 JUL 63
1963 21C	SOLAR RADIATION	US	15 JUN	1 AUG 63
1963 21D		US	15 JUN	30 JUL 63
1963 21E		US	15 JUN	27 JUL 63
1963 21F		US	15 JUN	5 JUL 63
1963 21G		US	15 JUN	3 JUL 63
1963 23A	VOSTOK 6	USSR	16 JUN	19 JUN 63****
1963 23B		USSR	16 JUN	18 JUN 63
1963 25A		US	27 JUN	26 JUL 63
1963 27C		US	29 JUN	10 JUL 63
1963 28A		US	12 JUL	18 JUL 63
1963 28B		US	12 JUL	13 JUL 63
1963 28C		US	12 JUL	16 JUL 63
1963 29A		US	18 JUL	13 AUG 63
1963 29B		US	18 JUL	29 JUL 63
1963 32A		US	31 JUL	11 AUG 63
1963 32B		US	31 JUL	10 AUG 63
1963 33B		USSR	6 AUG	8-9 DEC 63
1963 34A		US	24 AUG	12 SEP 63
1963 34B		US	24 AUG	8 SEP 63
1963 35A		US	29 AUG	7 NOV 63
1963 35B		US	29 AUG	28-29 SEP 63
1963 35C		US	29 AUG	2 SEP 63
1963 35D		US	29 AUG	1 SEP 63
1963 36A		US	6 SEP	13 SEP 63
1963 36B		US	6 SEP	13-14 SEP 63
1963 36C		US	6 SEP	10 SEP 63

DECAYED OBJECTS (CONT'D)

<u>OBJECT</u>	<u>CODE NAME</u>	<u>SOURCE</u>	<u>LAUNCH</u>	<u>DECAY</u>
1963 LAUNCHES (CONT'D)				
1963 36D		US	6 SEP	8 SEP 63
1963 36E		US	6 SEP	10-11 SEP 63
1963 36F		US	6 SEP	10 SEP 63
1963 37A		US	24 SEP	12 OCT 63
1963 40A		USSR	18 OCT	28-29 OCT 63
1963 40B		USSR	18 OCT	30-31 OCT 63
1963 40C		USSR	18 OCT	28-29 OCT 63
1963 40D		USSR	18 OCT	28-29 OCT 63
1963 41A		US	25 OCT	29 OCT 63
1963 41B		US	25 OCT	28-29 OCT 63
1963 41C		US	25 OCT	28-29 OCT 63
1963 42C		US	29 OCT	27 NOV 63
1963 44A	COSMOS 21	USSR	11 NOV	14 NOV 63
1963 44B		USSR	11 NOV	12 NOV 63
1963 45A		USSR	16 NOV	22 NOV 63
1963 45B	COSMOS 22	USSR	16 NOV	3 DEC 63
1963 48A		US	27 NOV	15 DEC 63

* USSR ANNOUNCED SUCCESSFUL RE-ENTRY AND RECOVERY
 ** SUCCESSFUL RE-ENTRY AND RECOVERY
 *** SUCCESSFUL RE-ENTRY, BUT NOT RECOVERY
 **** USSR ANNOUNCED SUCCESSFUL RE-ENTRY AND RECOVERY OF A MANNED SPACE VEHICLE
 ***** HIT MOON
 ***** US SUCCESSFULLY ORBITED AND RECOVERED A MANNED SPACE VEHICLE